



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,267	07/29/2003	Toshimitsu Matsuyoshi	MTS-3448US	6676

23122 7590 12/16/2005  
RATNERPRESTIA  
P O BOX 980  
VALLEY FORGE, PA 19482-0980

EXAMINER

JACKSON, BLANE J

ART UNIT	PAPER NUMBER
----------	--------------

2685

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/629,267

Applicant(s)

MATSUYOSHI, TOSHIMITSU

Examiner

Blane J. Jackson

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 14, 16, 20, 21 and 26 is/are rejected.
- 7) ☒ Claim(s) 10-13, 15, 17-19 and 22-25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7, 9, 20 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 7, the meaning of "the inverted envelope signal is injected via the distortion generating circuit" is unclear and not supported in the figures or Specification. Further, "amplitude" is expected to read "amplifying".

As to claim 9 with respect to claim 5 and in view of claim 12, it is unclear where in the circuit "the inverted envelope signal adjusted in amplitude or phase is inputted".

As to claims 20 and 21, it is unclear as to the meaning of "third level" in "the power amplifier according to claim 4 (12) further comprising *third level detecting means*"

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

Art Unit: 2685

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 8, 9, 14, 16 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Sahlman (US 6,934,341).

As to claims 1 and 3, Sahlman teaches a power amplifying apparatus and method comprising:

Amplifying a high frequency signal modulated by an input signal (figures 4 and 13),

Generating an inverted envelope signal by using the input signal or the high frequency signal, the inverted envelope signal having an inverted envelope which is inverted one of both envelopes of the high frequency signal, and

Injecting the inverted envelope signal into the high frequency signal or the amplified high frequency signal (digital predistortion to reduce third order distortion and an analog feed forward loop to combine the amplified error signal in anti-phase with the output of the MPA (405) to cancel the wide-band distortion, column 5, line 58 to column 6, line 42 and for figure 13, column 11, line 45 to column 12, line 40).

As to claims 2 and 4 with respect to claims 1 and 3, Sahlman teaches based on information about a signal level of the amplified high frequency signal or a signal level of a modulation frequency band included in the high frequency signal, adjustment is performed on the amplitude of the inverted envelope signal and/or a phase of the inverted envelope signal or a phase of the high frequency signal before the injecting step so that a signal level of the modulation frequency band is substantially minimum

Art Unit: 2685

(figure 4, loop gain and phase adjuster (415), column 6, line 61 to column 7, line 4 – Note figure 4 lacks indication of the control input from the controller (402) to the gain/phase adjuster but figure 13 makes this requirement clear for the signal processor (1305) to digitally control the gain/phase adjuster (1323), column 11, line 45 to column 12, line 20).

As to claim 5, Sahlman teaches the power amplifier according to claim 4 further comprising a distortion generating circuit generating a distorted signal for canceling distortion generated from the amplifying means and injecting the distorted signal into an input side of the amplifying means (figure 13, pre-distortion Upconverter (1308), column 11, lines 20-32, predistortion and the feed forward loop both contribute to cancel distortion).

As to claim 6 with respect to claim 5, Sahlman teaches the inverted envelope signal is injected into the amplified high-frequency signal (figure 13, coupler (1324)).

As to claim 8 with respect to claim 5, Sahlman teaches the power amplifier further comprising:

a baseband part of generating an I signal and a Q signal orthogonal to the I signal from the input signal (figure 13, baseband generator (1304)),

a demodulating part demodulating the modulated high-frequency signal to the I signal and the Q signal (measurement downconverrter (1313), the baseband I and Q signals are sampled and processed in the distribution network (1303)),

wherein the distortion generating circuit generates a distorted signal for canceling distortion in the amplified high frequency signal based on the I signal and Q signal generated in the baseband part and the I signal and Q signal outputted from the demodulating part (system description for feedforward (and predistortion) circuits to cancel distortion in the amplified high frequency signal: column 11, line 45 to column 12, line 40).

As to claim 9 with respect to claim 5, Sahlman teaches the distortion generating circuit generates the distorted signal when the inverted envelope signal adjusted in amplitude or phase is inputted (the specific integrated circuit (1305) provides timing and control of the circuits, column 11, line 59 to column 12, line 11).

As to claim 14 with respect to claim 8, Sahlman teaches the distortion generating circuit is provided in the baseband part (figure 13, predistortion (1410), column 13, lines 25-41).

As to claim 16 with respect to claim 4, Sahlman teaches the power amplifier further comprising first level detecting means of detecting a signal level of the amplified high frequency signal,

Wherein the first amplitude adjusting means and or the first phase adjusting means is controlled by the control circuit based on information acquired by the first level detecting means about the signal level of the amplified signal (figure 4, controller (402) or ASIC (1305) of figure 13, provides the correct delay and gain compensation at gain/phase adjuster (1323) based on the measurement chain, column 6, lines 43-53).

As to claim 26, Sahlman teaches a solution for transmitting a plurality of carriers in a wireless transceiving mobile telephone systems, column 1, lines 10-25.

### ***Allowable Subject Matter***

3. Claims 10-13, 15, 17-19 and 22-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fitzpatrick et al. (US 6,266,517) discloses a method and apparatus for correcting distortion in a transmitter utilizing predistortion and a feed forward correction loop. Bauman (US 4,389,618) discloses an adaptive feed-forward system. Louis et al. (US 6,744,316) discloses a feedforward system to reduce distortion in a transmitter. Bar-David et al. (US 6,091,297) discloses adaptive adjustments of feedforward linearized amplifiers. Belcher et al. (US 5,760,646) discloses feedforward

Art Unit: 2685

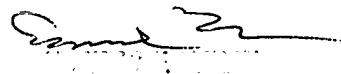
correction loop with adaptive predistortion injection for linearization of RF power amplifier.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJJ



Blane J. Jackson